



A.D. 1867, 13th MARCH. N° 729.

S P E C I F I C A T I O N

OF

JAMES CONYERS MORRELL.

DRY CLOSETS.

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LETTERS PATENT to James Conyers Morrell, of Leyland, in the County of Lancaster, for the Invention of “**IMPROVEMENTS IN APPARATUS APPLICABLE TO DRY CLOSETS FOR DISINFECTING AND DEODORISING AND PREPARING MANURE, PARTS OF WHICH ARE APPLICABLE TO THE SEPARATING OF CINDERS FROM ASHES.**”

Sealed the 10th September 1867, and dated the 13th March 1867.

PROVISIONAL SPECIFICATION left by the said James Conyers Morrell at the Office of the Commissioners of Patents, with his Petition, on the 13th March 1867.

I, JAMES CONYERS MORRELL, of Leyland, in the County of Lancaster, do
5 hereby declare the nature of the said Invention for “**IMPROVEMENTS IN APPARATUS APPLICABLE TO DRY CLOSETS FOR DISINFECTING AND DEODORISING AND PREPARING MANURE, PARTS OF WHICH ARE APPLICABLE TO THE SEPARATING OF CINDERS FROM ASHES,**” to be as follows (that is to say) :—

This Invention has for its object certain improvements applicable to the
10 class of closets known as dry closets, and by which the whole of the unconsumed cinders are saved.

To construct a closet according to this Invention it may be formed with a seat in the ordinary way, the opening in which is or may be covered by a lid working on its horizontal surface, and which can be moved by hand on a
15 vertical pivot when the closet is required for use when it is locked until the person using the closet rests on the seat, the cover is then prevented returning

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by means of a suitable catch, which is brought into action by the depression of the front of the seat, and on the seat being relieved from pressure the cover returns to its former position by means of weights, levers, or other suitable contrivance. Beneath the seat of the closet it is proposed to form a small tramway, upon which travels a small truck containing a receiver, but of course this arrangement may be varied according to circumstances.

The exterior of the closet is fitted with a riddle, screen, or seive placed at an angle to the horizon on a frame, the bottom of which is at an opposite angle, and forms a trough or shoot to receive the ashes which fall from the riddle thereonto. The riddle and trough, which are in one piece, are jointed to the exterior of the closet; the nozzle or throat of the shoot projecting through an opening in the wall of the closet below the seat and immediately above the manure receptacle. The riddle with its inversed shoot, which are in one piece, is jointed by one of its upper edges or corners nearest to the wall to a gudgeon or other suitable joint attachment in the wall, and below at a distance from the wall, so as to cause the shoot and riddle by its own weight to fall towards the vertical surface of the wall to which it is jointed. This combined riddle and shoot may be enclosed within a suitable pent house provided with a suitable door, through which the ashes and cinders are thrown on to the riddle, and may make its delivery of ashes into a fixed shoot in the wall of the closet, and in which a feed and measuring apparatus may be fitted, the cinders falling from the lower part of the riddle into any suitable receptacle for reuse. Action is given to the combined riddle and shoot for the separation of the ashes from the cinders by an arrangement similar to that of a tilt hammer, the action of which is or may be given from the depression of the seat opening or closing of the closet door, opening or closing the lid of the seat by depression on the footboard in front of the closet seat, or in any other convenient manner. The action may be given to the riddle either vertically, horizontally, or obliquely. The riddle or screen may also be agitated by suspending it at its lower end with a spring, rope, or chain, which is drawn tight on opening the door, and on being liberated vibrates between two fixed buffers until it finally settles itself into its original position.

The throat of the trough, which may be stationary or moveable, is fitted with a transverse or vertical axle, on which are one, two, or more radial blades placed horizontally or vertically, as may be found most convenient in arrangement. These radial blades act as propellers to discharge a given quantity of ashes into the cesspool or receptacle for the deposit. The axle carrying the radial arms may be actuated by the seat cover, the opening and

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closing of the door by the deflection of the seat of the closet, or by means of a handle, or in any other convenient way, as will be well understood. A convenient action for working the spindle carrying the radial arms will be that known as the patent windlass, which consists of a ratchet wheel keyed on the
5 axis carrying the radial blades encompassed by an eye on the head of a lever, to which is jointed a pall tooth, the lever being of sufficient length to act as its own counterweight; this lever may be actuated by depression of the seat, opening or closing of the door, moving the cover of the opening of the seat to one side, or returning it to its normal position, which may be either done by
10 rods, levers, or cords and pulleys, as will be readily understood by any practical mechanic.

In lieu of the radial blades on the rotating axle for regulating the supply of ashes on each action of the closet a cylindrical rotating vessel may be used, one half of which is enclosed hollow or solid, and the other open at top and
15 bottom, and being fitted into a cylindrical hopper throat, upon having half a rotation on its axis will discharge half its cubic contents of ashes into the manure receptacle, and so on. The rotation may be given to this ashes charger or measurer by motion communicated through the door, seat, seat cover, footboard of the closet, or in any other convenient manner.

20 The rotating ashes discharger may be displaced by fitting two sliding plates working across the throat of the hopper, one being placed a little above the other, and connecting them together by a beam lever jointed to the outside of the hopper at a point between the sliding plates, to which the ends of the beam is also jointed. A spring or counterweight may be used to regulate the
25 action, and the discharge can be effected by connecting the same to any of the moving parts of the closet.

The top of the cover for the opening in the seat is fitted with a hopper for containing a disinfecting powder, the throat of which is fitted with a pair of plates jointed on to a beam or lever similar to that of a shot flask, which on
30 the cover being brought round to cover the opening in the seat will discharge the required measure for disinfecting powder; an ounce or two of which powder will be sufficient, therefore the apparatus must necessarily be of small dimensions; or in lieu of the hopper on the swivelling cover a hopper may be placed on the back or side of the seat of the closet for containing the dis-
35 infectant powder. Below the lower orifice of the hopper is fitted a trough inclining towards the centre of the deposit receptacle; a segmentary valve is fitted over the trough and closes the orifice of the hopper; on the depression of the seat by means of vibrating levers one end of the segment is made to fall and close the end of the trough, leaving the orifice of the disinfectant

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hopper open that the trough may be filled with the powder. On rising from the seat, by means of a counterbalance weight or spring, or handle, the other end of the segment is returned to its former position, closing the orifice of the hopper, and allowing the disinfectant to fall from the trough on the deposit; or the mouth of the hopper may be fitted with a chamber in which works a 5 ram or forcer, and on depressing the seat this ram is drawn back and the disinfectant allowed to fall from the hopper into the chamber, when on rising from the seat this ram by means of a spring, weight, or handle drives before it the deodorising powder from the chamber into the deposit receptacle. Beyond the front of the ram project two flanches, one on each side, between 10 which is suspended a balance valve, which is tilted by coming in contact with a stud or other impediment placed in the upper part of the chamber. This valve on being closed prevents the powder escaping into the receptacle.

By another modification the orifice of the seat may be provided with a concave cover divided in the middle, the under portion of the convex side 15 being fitted or covered with a hollow or perforated plate; on the depression of the seat, or by motion from a handle, the cover divides and opens to the right and left; on the relief of pressure from the seat, or the reuse of the handle the concave cover returns to its former position, and in the act of doing so the cavities are supplied with charges of disinfectant powder from hoppers 20 placed on each side by means of a valvular arrangement similar to that of a shot flask. When closed the powder is allowed to fall through the perforated plate on to the fresh deposit.

The contents of the deposit receiver may be removed to a manufactory, as herein-before described, either in the ordinary way, by an exhausted air vessel, 25 or by conveying the receptacles with their contents bodily.

The manufactory may be of the following construction:—This building is arranged with several drying floors in steps at different elevations on either side of a central trough in which a screw or other mechanism is worked to move the dried matters to one end of the drying chamber, where there is a 30 receiver having a mechanical mixer worked thereon, where the dried matters are mixed with other manuring substances according to the purposes to which the manures are to be applied. Below the drying floors are steam or hot water pipes, or hot air flues, or suitable means of heating the floors. The perpendicular supports of the steps or floors in front may be perforated, 35 so as to admit of the passing of cold or hot air over the material to be dried on the succeeding or following floor. The moist matters from the closets are first spread on the uppermost floors, and then raked or moved down on to the next floor, and so on from floor to floor till they arrive into the central trough.

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The drying chamber is ceiled over at top, and provision is made for ventilation from one end to the other of the drying chamber, where a chimney is situated. Over the ceiling is a storing chamber, and at the end of the building where the chimney is situated and where the vapours are received there are endless
5 reticulate or perforated aprons on which absorbant matters are spread, and up through which the vapours pass in their way to the chimney, by which means any gases or vapours which may be desired to collect are absorbed, and the endless aprons have a motion towards the centre, so as to deliver the matters placed therein into the mixing apparatus.

10 **SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said James Conyers Morrell in the Great Seal Patent Office on the 12th September 1867.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JAMES CONYERS MORRELL, of Leyland, in the County of Lancaster, send greeting.

15 **WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirteenth day of March, in the year of our Lord One thousand eight hundred and sixty-seven, in the thirtieth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said James Conyers Morrell, Her special licence that I, the said James
20 Conyers Morrell, my executors, administrators, and assigns, or such others as I, the said James Conyers Morrell, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and all times thereafter during the term therein expressed should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and
25 Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN APPARATUS APPLICABLE TO DRY CLOSETS FOR DISINFECTING AND DE-ODORISING AND PREPARING MANURES, PARTS OF WHICH ARE APPLICABLE TO THE SEPARATING OF CINDERS FROM ASHES,**" upon the condition (amongst others) that I, the said James Conyers Morrell, my executors or administrators, by an
30 instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

35 **NOW KNOW YE**, that I, the said James Conyers Morrell, do hereby declare the nature of my said Invention, and in what manner the same is to

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be performed, to be particularly described and ascertained in and by the following statement:—

This Invention has for its object certain improvements applicable to the class of closets known as dry closets, and by which the whole of the unconsumed cinders are saved. . 5

Section 1.—To construct a closet according to this Invention it may be formed with a seat in the ordinary way, the opening in which is or may be covered by a lid working on its horizontal surface, and which can be moved by hand on a vertical pivot when the closet is required for use, when it is locked until the person using the closet rests on the seat. The cover is then prevented returning by means of a suitable catch, which is brought into action by the depression of the front of the seat, and on the seat being relieved from pressure the cover returns to its former position by means of weights, levers, or other suitable contrivance. Beneath the seat of the closet it is proposed to form a small tramway, upon which travels a small truck containing a receiver, but of course this arrangement may be varied according to circumstances. 10 15

Section 2.—The exterior of the closet is fitted with a riddle, screen, or sieve, placed at an angle to the horizon on a frame, the bottom of which is at an opposite angle, and forms a trough or shoot to receive the ashes which fall from the riddle thereonto. The riddle and trough are jointed to the exterior of the closet, the nozzle or throat of the shoot projecting through an opening in the wall of the closet below the seat, and immediately above the manure receptacle. The riddle with its inversed shoot, which are in one piece, is jointed by one of its upper edges or corners nearest to the wall to a gudgeon or other suitable joint attachment in the wall, and below at a distance from the wall, so as to cause the shoot and riddle by its own weight to fall towards the vertical surface of the wall to which it is jointed. This combined riddle and shoot may be enclosed within a suitable pent house provided with a suitable door, through which the ashes and cinders are thrown on to the riddle, and may make its delivery of ashes into a shoot fixed in the wall of the closet, or immediately under the orifice of the seat, and in which a feed and measuring apparatus may be fitted, the cinders falling from the lower part of the riddle into any suitable receptacle for reuse. Action is given to the combined riddle and shoot for the separation of the ashes from the cinders by an arrangement similar to that of a tilt hammer or lifting ratchet wheel, the action of which is or may be given from the depression of the seat, opening, or closing of the closet door, opening or closing the lid of the seat by depression on a footboard in front of the closet seat, or in any other convenient manner. The action may be either given to the riddle either vertically, horizontally, or obliquely 20 25 30 35

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The riddle or screen may also be agitated by suspending it at its lower end with a spring rope or chain, which is drawn tight on opening the door, and on being liberated vibrates between two fixed buffers until it finally settles itself into its original position.

5 Section 3.—The throat of the trough, which may be stationary or moveable, is fitted with a transverse or vertical axle, on which are one, two, or more radial blades placed horizontally or vertically, as may be found most convenient in arrangement; these radial blades act as propellers to discharge a given quantity of ashes into the cesspool or receptacle for the deposit, or if
10 placed under the orifice of the seat retain a quantity of ashes and disinfectant if necessary for absorbing and deodorizing the deposit until discharged into the receptacle. The axle carrying the radial arms may be actuated by the seat cover, the opening and closing of the door by the deflection of the seat of the closet by means of a handle, or in any other convenient way, as will
15 be well understood. A convenient action for working the spindle carrying the radial arms will be that known as the patent windlass, which consists of a ratchet wheel keyed on the axis carrying the radial blades, encompassed by an eye on the head of a lever to which is jointed a pall tooth, the lever being of sufficient length to act as its own counterweight; this lever may be actuated
20 by depression of the seat, opening or closing of the door, moving the cover of the opening of the seat to one side, or returning it to its normal position, which may be either done by rods, lever, or cords and pulleys, as will be readily understood by any practical mechanic.

Section 4.—In lieu of the radial blades on the rotating axle for regulating
25 the supply of ashes on each action of the closet a cylindrical rotating vessel may be used, one half of which is enclosed hollow or solid, and the other at top and bottom, and being fitted into a cylindrical hopper throat, upon having half a rotation on its axis will discharge half its cubic contents of ashes into the manure receptacle, and so on. The rotation may be given to this
30 ashes charger or measurer by motion communicated through the door, seat, seat cover, footboard of the closet, or in any other convenient manner.

Section 5.—The rotating ashes discharger may be displaced by fitting two sliding plates working across the throat of the hopper, one being placed a little above the other, and connecting them together by a beam lever jointed
35 to the outside of the hopper at a point between the sliding plates to which the ends of the beam are also jointed. A spring or counterweight may be used to regulate the action, and the discharging can be effected by connecting the same to any of the moving parts of the closet.

Section 6.—The top of the cover for the opening in the seat is fitted with a

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hopper for containing a disinfecting powder, the throat of which is fitted with a pair of plates jointed on to a beam or lever, similar to that of a shot flask, which on the cover being brought round to cover the opening in the seat will discharge the required measure of disinfecting powder, an ounce or two of which powder will be sufficient, therefore the apparatus must necessarily be of 5 small dimensions.

Section 7.—In lieu of the hopper on the swivelling cover a hopper may be placed on the back or side of the seat of the closet for containing the disinfecting powder. Below the lower orifice of the hopper is fitted a trough inclining towards the centre of the deposit receptacle. A segmentary valve 10 is fitted over the trough and closes the orifice of the hopper. On the depression of the seat by means of vibrating levers one end of the segment is made to fall and close the end of the trough, leaving the orifice of the disinfectant hopper open that the trough may be filled with the powder; on rising from the seat by means of a counterbalance weight, a spring, or handle, the other 15 end of the segment is returned to its former position closing the orifice of the hopper and allowing the disinfectant to fall from the trough on the deposit.

Section 8.—In lieu of the above the mouth of the hopper may be fitted with a chamber in which works a ram or forcer, and on depressing the seat this ram is drawn back and the disinfectant allowed to fall from the hopper 20 into the chamber, when on rising from the seat this ram by means of a spring, weight, or handle, drives before it the deodorising powder from the chamber into the deposit receptacle. Beyond the front of the ram project two flanches, one on each side, between which is suspended a balance valve, which is tilted by coming in contact with a stud or other impediment placed in the upper 25 part of the chamber; this valve on being closed prevents the powder escaping into the receptacle.

Section 9.—By another modification the orifice of the seat may be provided with a concave cover divided in the middle, the under portion of the convex side being fitted or covered with a hollow or perforated plate; on the de- 30 pression of the seat, or by motion from a handle, the cover divides and opens to the right and left. On the relief of pressure from the seat or the reuse of the handle the concave cover returns to its former position, and in the act of doing so the cavities are supplied with charges of disinfectant powder from hoppers placed on each side by means of a valvular arrangement similar to 35 that of a shot flask. When closed the powder is allowed to fall through the perforated plate on to the fresh deposit. Any of the above in lieu of discharging the disinfectant on to the fresh deposit may discharge the same into the ash measurer before or after voiding.

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Section 10.—The contents of the deposit receiver may be removed to a manufactory, as herein-before described, either in the ordinary way by an exhausted air vessel, or by conveying the receptacles with their contents bodily.

- 5 The manufactory may be of the following construction:—This building is arranged with several drying floors in steps or at different elevations on either side of a central trough in which a screw or other mechanism is worked to move the dried matters to one end of the drying chamber, where there is a receiver having a mechanical mixer worked thereon, where the dried matters
10 are mixed with other manuring substances according to the purposes to which the manures are to be applied. Below the drying floors are steam or hot water pipes, or hot air flues, or other suitable means of heating the floors. The perpendicular supports of the steps or floors in front may be perforated so as to admit of the passing of cold or hot air over the material to be dried
15 on the succeeding or following floor. The moist matters from the closets are first spread on the uppermost floors and then raked or moved down on to the next floor, and so on from floor to floor till they arrive into the central trough. The drying chamber is ceiled over at top, and provision is made for ventilating from one end to the other of the drying chamber, where a chimney is situated.
20 Over the ceiling is a storing chamber, and at the end of the building where the chimney is situated and where the vapours are received there are endless reticulate or perforated aprons on which absorbent matters are spread, and up through which the vapours pass in their way to the chimney, by which means any gases or vapours which may be desired to collect are absorbed, and the
25 endless aprons have a motion towards the centre, so as to deliver the matters placed therein into the mixing apparatus.

Having in the foregoing explained in detail the improved appliances to the object named I claim the following as the novel features of my Invention, the parts of which may be worked separately or in combination,—

- 30 First, the closet seat orifice cover fitted and worked, as described in Section 1.

Second, the application of a movable circular or other screen or riddle agitated or revolved as herein described for the more perfect separation of ashes from cinders and delivery of the same by motion communicated from
35 the opening or closing of the closet or other door seat or lid, or by pressure of the foot, hand, or body, or by self-acting mechanism.

Third, the riddle, screen, or sieve, as described in Section No. 2.

Fourth, the ash measuring and discharging apparatus, described in Sections 3, 4, and 5.

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Fifth, the disinfectant measures and dischargers, described in Sections 6, 7, 8, and 9.

Sixth, the arrangement of drying floors or steps on each side of a central trough, the perpendicular supports of such floors or steps being perforated for the admission of hot or cold air, and the arrangement of endless reticulated 5 moving aprons for continuously receiving and delivering the gas absorbent, as described in Section No. 10.

In witness whereof, I, the said James Conyers Morrell, have hereunto set my hand and seal, this Twelfth day of September, in the year of our Lord One thousand eight hundred and sixty-seven. 10

J. CONYERS MORRELL. (L.S.)

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